

## REPORT DOCUMENTATION PAGE

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<b>14. ABSTRACT</b>  The Tunisian Physical Society "Societe Tunisienne de Physique" (STP) was established in 1981. It is a scientific association with non-profit professional goal whose objective is to create a scientific framework grouping all the physicists (all confused disciplines) of all the university institutions, schools, industrial and agricultural, with an aim of raising the physical sciences and its developing in all the fields. The primary purposes of the society are to advance research and scholarly exchange in the study of physical sciences, to provide means for research and publications, and to organize and support national and international conferences. The scope of the conference was to provide an interdisciplinary forum and to bring together researchers from various fields to discuss latest developments and challenges of conducting and superconducting materials which are believed to be quite promising not only for nanotechnology but also for fundamental physics.  The proceedings of the ICoCoM2010 will be published in two special issues (1) A special issue of Synthetic Metals for basically the topics related to conducting polymers. The issue will contain 20-25 of the selected papers ( <a href="http://www.elsevier.com/wps/find/journaldescription.cws_home/504105/description#description">http://www.elsevier.com/wps/find/journaldescription.cws_home/504105/description#description</a> ). (2) A special issue of Journal of Physics: Condensed Matter, related the topics dealing with superconducting materials and strongly correlated electron systems. This issue will not include only papers from the conference attendees but also contributions from invited authors selected by the scientific committee and the journal Editorial Board. There will be roughly 40 accepted papers ( <a href="http://iopscience.iop.org/0953-8984/">http://iopscience.iop.org/0953-8984/</a> ).						
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**SOCIÉTÉ TUNISIENNE DE PHYSIQUE**

**REPORT OF THE  
INTERNATIONAL CONFERENCE ON  
CONDUCTING MATERIALS**

*New Trends in Conducting Materials:  
From Fundamentals to Applications*



**3<sup>RD</sup>-7<sup>TH</sup> NOVEMBER 2010 SOUSSE – TUNISIA**

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## Organizing Committee

**Samir Romdhane** (Chair)  
**Samia Charfi-Kaddour** (Co-chair)

**Dorra Abidi**  
**Amel Benfredj-Romdhane**  
**Sonia Haddad**  
**Faycal Kouki**  
**Lassaad Mandhour**  
**Riad Neffati**  
**Mourad Telmini**  
**Mohamed Ali Zaïbi**

## Coordination Committee

**Najeh Thabet Mliki** (President of the Tunisian Physical Society STP)  
**Tahar Othman** (Treasurer of STP)  
**Mourad Bouteraa** (Secretary-General of STP)

## Conference Web site

<http://www.stp.org.tn/ICOCOM2010>



Société Tunisienne de Physique, Département de Physique, Faculté des Sciences de Tunis 2092 Tunis El Manar, Tunisie  
Tél/Fax : + 216 70 861 599, site web : [www.stp.org.tn/ICoCoM2010](http://www.stp.org.tn/ICoCoM2010)



## Sponsors

The organizers have provided assurance that ICoCoM 2010 will be conducted in accordance with IUPAP principles as stated in the ICSU-Document "Universality of Science" (sixth edition, 1989) regarding the free circulation of scientists for international purposes. In particular, no bona fide scientist will be excluded from participation on the grounds of national origin, nationality, or political consideration unrelated to science.

We wish to thank European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory ([www.london.af.mil](http://www.london.af.mil)) and all the sponsors for their contribution to the success of this conference



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## FOREWORD

The International Conference on Conducting Materials (ICoCoM2010) has been successfully held in Sousse, Tunisia from 3rd to 7th November 2010. We are pleased to share this proceeding report to all of you who have been involved during the conference as well as those who were not able to attend the conference. May we take this opportunity to express our profound thanks and appreciation to all of the distinguished speakers and to the contributions of all attendees who are willing to share their experiences and to make the conference success.

We would also like to express our gratitude to those who contributed to complete this work especially national and international committee members for the valuable works.

Chair of ICoCoM 2010  
Samir Romdhane  
Co-Chair of ICoCoM 2010  
Samia Charfi-Kaddour



Société Tunisienne de Physique, Département de Physique, Faculté des Sciences de Tunis 2092 Tunis El Manar, Tunisie  
Tél/Fax : + 216 70 861 599, site web : [www.stp.org.tn/ICoCoM2010](http://www.stp.org.tn/ICoCoM2010)

## Purpose of ICoCoM2010

The Tunisian Physical Society “Société Tunisienne de Physique” (STP), was established in 1981. It is a scientific association with non-profit professional goal whose objective is to create a scientific framework grouping all the physicists (all confused disciplines) of all the university institutions, schools, industrial and agricultural, with an aim of raising the physical sciences and its developing in all the fields. The primary purposes of the society are to advance research and scholarly exchange in the study of physical sciences, to provide means for research and publications, and to organize and support national and international conferences.

The scope of the conference was to provide an interdisciplinary forum and to bring together researchers from various fields to discuss latest developments and challenges of conducting and superconducting materials which are believed to be quite promising not only for nanotechnology but also for fundamental physics.

The topics covered by the conference were:

### 1/ Organic Conductors:

- New conjugated polymers and oligomers: Synthesis and characterization
- Hybrid Organic-Inorganic structures
- Organic Electronics: Theoretical considerations
- Electronics application: photovoltaic devices, OLEDs and field effect transistors...
- Organic nanomaterials
- Nonlinear optical effects and applications

### 2/ Superconducting materials:

- Developments in High-Tc superconductors
- Superconducting materials: Iron based superconductors, Novel molecular materials
- Graphene and Carbon nanotubes: Experiments, theory and applications
- Low dimensional organic superconductors: new aspects from experiments to theory
- New quantum phenomena in strongly correlated systems



**Tuesday 2<sup>nd</sup> November 17h30**

## **Opening ceremony**

The Conference opened at 17:30 pm on with a statement by Pr. Samir Romdhane as Chair of ICoCoM 2010. The opening panel included Pr. Refaat Chaabouni, Secretary of State to the Minister of Higher Education and Scientific Research, in charge of Scientific Research, M. Taïeb Ragoubi, Governor of Sousse, Pr. Ahmed Noureddine Hlel, President of University of Sousse, Pr. Najeh Thabet-Mliki, President of the Tunisian Physical Society (Société Tunisienne de Physique) and Pr. Samia Kaddour-Charfi Co-Chair of ICoCoM 2010.

The conference was officially opened by Secretary of State to the Minister of Higher Education and Scientific Research, in charge of Scientific Research, Pr Refaat Chaabouni, who gave a large overview of research in Tunisia and the effort of the Minister of Higher Education and Scientific Research to improve the performance of research in Tunisia, especially in the priority axes of the government. Pr Chaabouni congratulated the participants of the conference on its opening and wished it a successful and fruitful work.



## Opening Ceremony Speech

by Pr. Samir Romdhane Chair of ICoCoM2010

Honourable Secretary of State in charge of Scientific Research, honourable Governor of Sousse, Honourable President of The University of Sousse, honourable guests.

It is a real pleasure to welcome such an eminent gathering of professors and researchers in Tunisia. I would also like to welcome our honourable guests and all of you and I wish all of you a pleasant stay among us and success in your work.

I will make my introductory speech as short as possible and focus on the following point by answering the question:

What brought us together to organize the ICoCoM conference?

The main motivation of the board of the Tunisian Physical Society by organizing such a conference is to improve his international activities in order to inspire, train, and support leading scientists and help in the development of the research in Tunisia and more generally in Africa. By organizing specialized and high quality conferences, schools, meetings, with acceptable fees, the TPS would like to make them accessible for a large number of scientists especially for young researchers from developing countries.

The scope of the conference is then to bring together researchers from various fields to discuss latest developments and challenges of conducting and superconducting materials. The conference should provide an interdisciplinary forum to exchange recent results and to promote new frontiers in the physics of those materials.

This event is substantially important to support research activities in North Africa, since it is devoted to the rapidly growing domain of the physics of conducting materials where various fields of fundamental Science and technology interact close together.

The two main topics covered by our conference are:

- 1) Organic Conductors:
- 2) Superconducting materials



First why organic materials:

Organic Conductors have received more attention after Y2K when Alan J. Heeger, Alan G. McDiamic and Hideki Shirakawa received the Nobel Prize in Chemistry "For the discovery and development of conductive organic polymers".

One of the main reasons for developing organic semiconductors instead of mineral ones is their potential in producing lower cost devices. For example, countries like Tunisia, Algeria, Morocco or other African countries can't compete with multinational companies in the fabrication of integrated circuits based on silicon. One manufactory costs at least some billions of dollars. Also their mechanical properties (light weight, flexibility and elasticity, ease of production of thin layers by special printing techniques) are some advantages over their inorganic counterparts. However, they have quite a few disadvantages like their higher chemically reactivity, which means they need more protection by encapsulation. Because of lower melting point they are more temperature sensitive in comparison to inorganic semiconductors and finally the process of the charge transfer mechanisms remains not completely elucidated. We have a lot of works to do.

Despite those disadvantages, organic semiconductors are now successfully used in commercial Organic Light Emitting Diodes, solar cells, and field effect transistors... Overall organic conductors are still fashionable materials that offer renewable exciting opportunities for the researchers from different fields, (physicists, chemists, electrical engineers,...). Their recent use in flat screen display makes them more attractive versus industry.

The second issue in our conference deals with Superconducting materials. This topic is also one of the most emphasis domains in nowadays. As for organic conductors it is a multi-disciplinary subject that needs contribution from physicist, chemists and industrials.

Since the discovery of high critical temperature in 1986, the physicists have renewed interest for superconductivity. Many new superconductors have since been discovered, and the theory of superconductivity in these materials is one of the major outstanding challenges of theoretical condensed matter physics. In February 2008, an iron-based family of high temperature superconductors was discovered. But a lot of work has still



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to be done to improve superconducting properties and to reach room-temperature superconductivity.

The superconducting materials are used to produce stable magnetic field for NMR, MRI and also to detect very low magnetic fields. Promising future applications include high-performance smart grid, electric power transmission, transformers, power storage devices, electric motors (e.g. for vehicle propulsion, or maglev trains), magnetic levitation devices, fault current limiters and superconducting magnetic refrigeration.

Finally, one of our fondest wishes is to facilitate discussions between participants, young and senior ones, from all countries. So I would now like to speak to young researchers asking them to make this event a lively one, to ask questions, to discuss with invited speakers and to propose new ideas.

More than 160 participants, from 24 countries, will attend this conference to participate to nine (9) plenary sessions, 30 invited talks, 62 oral presentations and 90 poster presentations.

We gratefully appreciate the financial supports from the Ministry of Higher Education and Scientific Research, University of Sousse, Faculty of Sciences of Tunis, TunisAir, the “La Société Italo-Tunisienne d'Exploitation Pétrolière (**Sitep**)”, the International Union of Pure and Applied Physics (**IUPAP**), the Abdus Salam International Centre for Theoretical Physics (**ICTP**), the European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory (**EOARD**), Vermeg and the “Institut Français de Coopération, Tunisie” (**IFC**).

These funds helped us to reduce the participation fees for young students and colleagues from developing countries.

With these few words may I once again, welcome you to Tunisia, land of tolerance and hospitality, and once again, I would like to thank all of you who participate in this conference and have prepared substantial contributions. Our special thanks go to the invited speakers who kindly accepted our invitation. I would like also to thank the members of the Organizing Committee, who worked very hard, and everybody who worked to make this event successful.

I wish every success to our conference. Enjoy your stay in our country. I hope you will have the opportunity to enjoy the beauty of Sousse, and to find out as much as possible during the conference about the progress of our country.

Thank you





# Annexure



Société Tunisienne de Physique, Département de Physique, Faculté des Sciences de Tunis 2092 Tunis El Manar, Tunisie  
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## Annexure 1

### International advisory committee

- |                                       |   |
|---------------------------------------|---|
| <b>Younes Abid</b> (Tunisia)          | <b>Kazushi Kanoda</b> , (Japan)         |
| <b>Kamel Alimi</b> (Tunisia)          | <b>Michel Héritier</b> (France)         |
| <b>Thierry Barisien</b> (France)      | <b>Gilles Horowitz</b> (France)         |
| <b>Heinz Bässler</b> (Germany)        | <b>Ivo Alexandre Hümmelgen</b> (Brazil) |
| <b>Raouf Bennaceur</b> (Tunisia)      | <b>Kazushi Kanoda</b> , (Japan)         |
| <b>Antonio Bianconi</b> (Italy)       | <b>Natasha Kirova</b> , (France)        |
| <b>Hélène Bouchiat</b> (France)       | <b>Murata Keizo</b> , (Japan)           |
| <b>Habib Bouchriha</b> (Tunisia)      | <b>Anna Köller</b> , (Germany)          |
| <b>Claude Bourbonnais</b> , (Canada)  | <b>Ouahab Lahcène</b> (France)          |
| <b>Serguei Brazovski</b> (France)     | <b>Mustapha Majdoub</b> (Tunisia)       |
| <b>Stuart Brown</b> (USA)             | <b>Daniel Ayuk Mbi Egbe</b> (Austria)   |
| <b>Samia Charfi-Kaddour</b> (Tunisia) | <b>Klaus Meerholz</b> (Germany)         |
| <b>Eugenio Coronado</b> (Spain)       | <b>Yung Woo Park</b> (Korea)            |
| <b>Joel Davenas</b> (France)          | <b>Claude Pasquier</b> (France)         |
| <b>Martin Dressel</b> (Germany)       | <b>Davor Pavuna</b> (Switzerland)       |
| <b>Habib Elhouiche</b> (Tunisia)      | <b>Nathaniel D. Robinson</b> (Sweden)   |
| <b>Jean-Louis Fave</b> (France)       | <b>Inès Safi</b> (France)               |
| <b>Francis Garnier</b> (France)       |   |





**Thierry Giamarchi**, (Switzerland)

**Joe Shinar** (USA)

**Mark Goerbiger** (France)

**John Singleton** (USA)

**Lotfi Hassine** (Tunisia)

**Cristiane. Morais Smith**  
(Netherlands)

**Michel Héritier** (France)

**Peter Spearman** (U.K)

**Gilles Horowitz** (France)

**André-Marie Tremblay** (Canada )

**Ivo Alexandre Hümmelgen** (Brazil)

**Shinya Uji** (Japan)

**Andrei Varlamov** (Italy)



## Annexure 2

### Scientific Program

#### Wednesday 3<sup>rd</sup> November

##### Morning Session

8:15-8:30

Welcome address

##### Plenary Session 1

Chairperson: Tremblay

8:30-9:15

**Garnier (France)**

Research strategies toward Efficient Photovoltaics

9:15-

**Kanoda (Japan)**

10:00

Electron correlation and spin frustration in quasi-triangular lattice organics

10:00-10:30

Coffee Break

#### Session I: Organic Conductors

##### Invited Session 1: IOC1

Solar cells

Chairperson: Egbe

10:30-11:00

**Davenas (France)**

Hybrid nanomaterial for solar cells: new challenges and perspectives

##### Oral Session OOC1

11:00-11:20

**Mabrouk (Tunisia)**

Theoretical modelling of some properties of donor–acceptor copolymers for bulk heterojunction solar cells

11:20-11:40

**Teketel (Ethiopia)**

Conducting Polymers Based Photoelectrochemical Solar Energy Conversion

11:40-12:00

**Reguig (Algeria)**

Investigation of low resistance transparent MOO<sub>3</sub>/AG/MOO<sub>3</sub> Multilayers-Applications as anode in organic solar cells

12:00-12:20

**Ghribi (Tunisia)** Effect of substrate on properties of RF magnetron sputtered CuInS<sub>2</sub> thin films from nanoparticles synthesised by solvothermal route

12:30-14:30

Lunch



## Session II: Superconductors and Related Materials

### Invited Session 1: ISC1 Low dimensional superconductors

**Chairperson:** Uji

- 10:30-11:00** Dressel (Germany)  
Fermi-Liquid vs. Non-Fermi-Liquid Behavior in Organic Conductors
- 11:00-11:30** Boubonnais (Canada)  
Superconductivity on the verge of spin density-wave order in low dimensional conductors
- 11:30-12:00** Tanda (Japan)  
Exotic Properties in Topological Crystals

### Oral Session OSC1

- 12:00-12:20** Makogon (The Netherlands)  
Spin-charge-density wave instability in 2D tight-binding models
- 11:20-12:40** Cano-Cotes (Spain)  
Quantum criticality in quarter-filled layered organic materials

**12:30-14:30** Lunch



## Afternoon Session

### Session I: Organic Conductors

#### Invited Session 2: IOC2

##### Conductivity in carbon based nanostructures

**Chairperson: Davenas**

**14:30-15:00      Hümmelgen (Brazil)**

Organic semiconductor based vertical architecture transistors

#### **Oral Session OOC2**

**15:00-15:20      Najeh (Tunisia)**

Non-linear conductivity in nanoporous carbon structures

**15:20-15:40      Machado (Brazil)**

WORM memory based on a carbon nanosphere-poly(vinylphenol) composite device

**15:40-16:00      Guellati (Algeria)**

H<sub>2</sub>-EtOH Effect During ACCVD synthesis

**16:00-16:20      Marchiori (Brazil)**

Density Functional Theory Study of polymer/fullerene supramolecules for solar cell applications

**16:30-17:00      Coffee Break**

#### Invited Session 3: IOC3

##### Conductivity in carbon based nanostructures

**Chairperson: Boukherroub**

**17:00-17:30      Robinson (Sweden)**

Graphene electrodes for metal-free organic light-emitting devices

#### **Oral Session OOC3**

##### **Special Talk**

**17:30-18:00      Ullah, (Austria)**

A comparative study of charge transport and Meyer-Neldel rule in Fullerene devices

**18:00-18:20      Schwabegger (Austria)**

High mobility, low voltage operating C<sub>60</sub> based n-type Organic Field Effect Transistors

**18:20-18:40      Ayachi (Tunisia)**

Optical and vibrational studies of grafting short





## Thursday 4<sup>th</sup> November

### Morning Session

#### Plenary Session 2

Chairperson: Giamarchi

8:30-9:15

**Triscone (Switzerland )**

Tuning Normal State and Superconducting Properties at the LaAlO<sub>3</sub>/SrTiO<sub>3</sub> Interface

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### Session I& II

#### Invited Session

Organic molecular design

Chairperson: Bässler

#### Special Talk

9:15-9:45

**Yamaguchi (Japan)**

Experiment of 200-meter Superconducting DC cable and R&D Subjects for Long Transmission Line

9:45-10:15

**Coronado (Spain)**

Molecular Spintronics using magnetic molecules and hybrid materials

10:15-10:45

**Ouahab (France)**

Multifunctional Molecular Materials : Conductivity and Magnetism

10:45-11:15

Coffee Break



## Session I: Organic Conductors

## Invited Session 5: IOC5

### Elaboration of new organic Materials

## **Chairperson: Robinson**

- 11:15-11:45 Spearman (UK)**  
Molecular crystal growth on surface modified SiO<sub>2</sub> substrates

Oral Session OOC4

- |             |   |
|-------------|---|
| 11:45-12:05 | <b>Ouili (Algeria)</b><br>Elaboration and characterization of the new hybrid material resulting from the mixture of polyaniline and SnNb <sub>5</sub> Se <sub>9</sub> |
| 12:05-12:25 | <b>Haïne (Algeria)</b><br>The influence of doping mode on the properties of polyaniline by acid sulfanilic  |

**12:30-14:30** **Lunch**

## Session II: Superconductors and Related Materials

## Oral Session OSC3

## Low dimensional superconductors: Experimental Investigation

**Chairperson:** Smith

- |             |   |
|-------------|---|
| 11:15-11:35 | <b>Ishioka (Japan)</b><br>Chirality in Charge-Density-Waves: STM measurement and Optical Polarimetry on 1T-TiSe <sub>2</sub>  |
| 11:35-11:55 | <b>Kawamoto (Japan)</b><br>Electronic States of the Weakly Incoherent Layered Organic Superconductor H-(DMEDO-TSeF) <sub>2</sub> [Au(CN) <sub>4</sub> ](THF) $\kappa$ |
| 11:55-12:15 | <b>Trunin (Russia)</b><br>Microwave Surface Impedance of $\kappa$ -(BEDT-TTF) <sub>2</sub> Cu[N(CN) <sub>2</sub> ]Br Single Crystals                                  |

**12:30-14:30** **Lunch**



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## Session II: Superconductors and Related Materials

### Invited Session 4: ISC4 Graphene and related materials

**Chairperson: Singelton**

- 16:30-17:00 Georbig (France)**  
Collective Excitations of Electrons in a Strong Magnetic Field: The Difference between Graphene and Semiconductor Heterostructures
- 17:00-17:30 Kusmartsev (UK)**  
Is Graphene or Silicene a Glass? Or can they exist in two-dimensional form?
- 17:30-18:00 Montambaux (France)** " Motion and merging of Dirac points in two-dimensional crystals

### Oral Session OSC4

- 18:00-18:20 Nawrocki (Poland)**  
Electrical and thermal conductance quantization in nanostructures
- 18:20-18:40 Miyagawa (Japan)**  
Magnetism in metallic and zero-gap states of a bulk quasi-two dimensional organic conductor,  
 $\theta$ -(ET)2I3

**19:00**

**Dinner**

**20:30-22:30**

**Poster session**



## Friday 5<sup>th</sup> November

### Morning Session

#### Plenary Session 4

Chairperson: Horowitz

- 8:30-9:15 Bassler (Germany)  
Exciton dissociation in organic semiconductors

- 9:15-10:00 Giamarchi (Switzerland)  
Cold atomic gases: quantum simulators for condensed matter

10:00-10:30 Coffee Break

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### Session I: Organic Conductors

#### Invited Session 7: IOC7

#### Excitons in organic systems

Chairperson: Bouchriha

- 10:30-11:00 Kirova (France)  
Physics of excitons in conducting polymers

#### Oral Session OOC6

##### Special Talk

- 11:00-11:30 Abid (Tunisia)  
Hybrid Organic inorganic self assembled nanostructures for optoelectronic

- 11:30-11:50 Saidani (Tunisia)  
Evidence for Triplet-Triplet annihilation in  $\alpha$ -quaterthiophene single crystal

12:30-14:30 Lunch



## Session II: Superconductors and Related Materials

### Invited Session 5 ISC5

#### New theories for low dimensional systems

**Chairperson: Bouchiat**

**10:30-11:00 Moraïs-Smith, (Netherlands)**

Will cold atomic systems help us to understand high-Tc superconductivity?

**11:00-11:30 Safi (France)**

How to measure fractional charges without recourse to current noise?

### Oral Session OSC5

**11:30-11:50 Seo (Japan)**

$\pi$ -d Mixed Multiband Nature and Magnetic Structure of Single Component Molecular Conductors

**11:50-12:40 Tamura (Japan)**

Molecular Design of Spin Systems and Non-Bonding Orbitals

**12:20-12:40 Otsuka (Japan)**

Numerical Study of One-Dimensional  $\pi$ -d Coupled Compound TPP[Fe(Pc)(CN)2]2

**12:30-14:30 Lunch**



## Afternoon Session

### Session I: Organic Conductors

#### Oral Session OOC7 Conductivity in organic systems

**Chairperson: Kirova**

- 14:50-15:10      Saidi (Algeria)**  
Pressure and Doping Effects on Conducting Polyacetylene
- 15:10-15:30      Beldjilali (Algeria)**  
Model for Charge Transport in Conducting Polymers
- 15:30-15:50      Boudahri (Algeria)**  
Application Of Theoretical Models To Study The Electrical Conductivity  
Of Composite Materials
- 15:50-16:10      Neffeti (Tunisia)**  
Fractal morphology and electrical conductivity in CB-polymer composites

**Coffee Break**

**17:00**

**Banquet**



## Session II: Superconductors and Related Materials

## Invited Session : ISC6

### **Chairperson: Kanoda**

- |             |  |
|-------------|--|
| 14:00-14:30 | <b>Murata (Japan)</b><br>High Pressure and High Field Properties on TTF-TCNQ, TSeF-TCNQ and HMTSF-TCNQ   |
| 14:30-15:00 | <b>Pratt (UK)</b><br>Spinon Condensation and Quantum Criticality of the Spin-liquid System<br>$\kappa$ -(BEDT-TTF)2Cu2(CN)3 revealed by $\mu$ SR   |
| 15:00-15:30 | <b>Singelton (USA)</b><br>Magnetic quantum oscillations in underdoped cuprate superconductors observed using fields of up to 85 T; patching the hole in the “roof” of the superconducting dome |

# **Oral Session OSC6**

## **Cuprates**

- |                    |  |
|--------------------|--|
| <b>15:20-15:40</b> | <b>Zhang (China)</b><br>Hall effects of Y0.74Ca0.26Ba3Cu3O7- $\delta$ /(Y1-xLax)(Ba1.74La0.26) Cu3O7- $\delta$ multilayers         |
| <b>15:40-16:00</b> | <b>Anis-ur-Rehman (Pakistan)</b><br>Synthesis and enhancement of current density in Bi(Pb)Sr(Ba)-2223 doped by rare-earth elements |

**16:00-16:30** **Coffee Break**

**17:00** **Banquet**



## Saturday 6<sup>th</sup> November

### Morning Session

#### Plenary Session 5

Chairperson: Park

- 8:30-9:15 Tremblay (Canada)**  
Manifestations of Mott Physics in Strongly Correlated Superconductivity
- 9:15-10:00 Egbe (Austria)**  
Polymer-Fullerene Bulk Heterojunction Solar Cells

**10:00-10:30**

**Coffee Break**

### Session I: Organic Conductors

#### Invited Session 8: IOC8

Hybrid organic-inorganic systems

Chairperson: Abid

- 10:30-11:00 Boukherroub (France)**  
Photocatalytic activity of silicon nanostructured substrates under visible light irradiation

#### **Oral Session OOC8**

- 11:00-11:20 Houichet (Tunisia)**  
Study of energy transfer in porous anodic alumina - rhodamine 110 nanocomposites
- 11:20-11:40 Abidi (Tunisia)**  
Hybrid Organic inorganic self assembled nanostructures for optoelectronic
- 11:40-12:00 Musa (France)**  
Investigations of optical properties of MEH-PPV/ ZnO nanocomposites by photoluminescence spectroscopy
- 12:00-12:20 Ben Jomaa (Tunisia)**  
Electrical and dielectric characteristics of MEH-PPV/ porous- GaAs/n+-GaAs heterojunction "

<b>12:30-14:30</b>	<b>Lunch</b>
<b>14 :00</b>	<b>Excursion</b>
<b>19 :00</b>	<b>Dinner</b>

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## Session II: Superconductors and Related Materials

### Invited Session ISC7 HTC and disorder

**Chairperson: Dressel**

- 10:30-11:00** **Varlamov (Italy)**  
New Approach in description of Nernst Effect"
- 11:00-11:30** **Bianconi (Italy)**  
Imaging power law distribution of dopant ordering favoring high temperature superconductivity"
- 11:30-12:00** **Pavuna (Switzerland)**  
The Challenge of In-situ Nano-Engineering of Novel High-Tc (Super-) Conductors and Related Quantum Matter

### Oral Session OSC7

- 12:00-12:20** **Zulkifli (Malaysia)**  
In-situ imaging of Structural Inhomogeneity and Local Jc Estimation in HTS Superconducting Tapes for Power Application
- 12:20-12:40** **Haddad (Tunisia)**  
Inhomogeneous layered superconductors: effect of disorder and magnetic field

**12:40-14:00**

**Lunch**

**14 :00**

**Excursion**

**19 :00**

**Dinner**



# Sunday 7<sup>th</sup> November

## Morning Session

### Session I: Organic Conductors

## **Oral Session OOC9**

### **Optical properties of organic systems**

## **Chairperson: Spearman**

- |             |  |
|-------------|--|
| 9:00-9:20   | <b>Mager (France)</b><br>Functionalization of Light Induced Self-Written Waveguides for the Implementation of Integrated Non Linear Optical Properties   |
| 9:20-9:40   | <b>Mbarek (Tunisia)</b><br>The effect of conjugation length on the emissive properties of modified PPV   |
| 9:40-10:00  | <b>Ammi (Algeria)</b><br>First-principles studies of structural and optical properties of poly (para-phenylene vinylene)   |
| 10:00-10:20 | <b>Trigui (Tunisia)</b><br>Structural and Optical Properties of a New-PbI based Wire Crystal:<br>(C <sub>6</sub> H <sub>13</sub> N <sub>3</sub> ) <sub>2</sub> Pb <sub>3</sub> I <sub>10</sub> |

10:20-10:50 Coffee Break

# **Oral Session I& II**

## **Manganites**

## **Chairperson: Ben Salem**

- |             |   |
|-------------|---|
| 10:50-11:10 | <b>Tozri (Tunisia)</b><br>Magnetic transition and magnetic entropy changes in<br>$\text{La}_0.7\text{Pb}_0.1\text{Na}_0.2\text{Mn}_3\text{O}_3$               |
| 11:10-11:30 | <b>Chihaoui (Tunisia)</b><br>Preparation and magnetic properties of $\text{Ca}_2\text{+}2\text{Mn}_4\text{+}\text{O}_4\text{-}$                               |
| 11:30-11:50 | <b>Boujelbene (Tunisia)</b><br>Crossover from classical to relaxor ferroelectrics in ceramics $\text{BaTi}_{1-x}(\text{Mn}_{1/2}\text{Nb}_{1/2})_x\text{O}_3$ |

## Closing (Sessions I & II)

**12:30-14:30** **Lunch**



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## Session II: Superconductors and Related Materials

## **Oral Session OSC8**

### **Cuprates and Fe based materials**

### **Chairperson: Safi**

- |              |  |
|--------------|--|
| 8:30-9:00    | <b>Ben Salem (Tunisia)</b><br>Effect of nanometer particles addition on the crystal structure and superconducting properties of high-temperature superconductors materials |
| 9 :00-9:20   | <b>Arcon (Slovenia)</b><br>Nuclear Magnetic Resonance Study of Antiferromagnetic Fluctuations in the Normal State of LiFeAs and NaFeAs                                     |
| 9 :20-9:40   | <b>Mahmood (Pakistan)</b> "TBA "   |
| 9 :40-10:00  | <b>Kamran (Pakistan)</b><br>Parity variation of flux quantization in a perforated superconducting thin film with periodic array of holes                                   |
| 10 :00-10:20 | <b>Moussa (Algeria)</b><br>DFT+U study on the magnetic stability of quaternary pnictide oxides RENiPnO compounds   |

10 :20-10:50

# Coffee Break

# **Oral Session I & II**

## **Manganites**

## **Chairperson: Ben Salem**

- |                      |  |
|----------------------|--|
| <b>10:50-11:10</b>   | <b>Tozri (Tunisia)</b><br>Magnetic transition and magnetic entropy changes in  |
| <b>11:10-11:30</b>   | La <sub>0.7</sub> Pb <sub>0.1</sub> Na <sub>0.2</sub> MnO <sub>3</sub>   |
| <b>11:30-11:50</b>   | <b>Chihaoui (Tunisia)</b><br>Preparation and magnetic properties of Ca <sub>2+2Mn4+O42-</sub>  |
|                      | <b>Boujelbene (Tunisia)</b><br>Crossover from classical to relaxor ferroelectrics in ceramics BaTi <sub>1-x</sub> (Mn <sub>1/2</sub> Nb <sub>1/2</sub> ) <sub>x</sub> O <sub>3</sub> |
| <b>11 :50-11 :20</b> | <b>Closing (Sessions I &amp; II)</b>   |
| <b>12 :30-14 :00</b> | <b>Lunch</b>   |

11 :50-11 :20

## **Closing (Sessions I & II)**

12 :30-14 :00

## Lunch

## **Summary of presented participations**

<b>Plenary sessions</b>	<b>Invited Talks</b>		<b>Oral Talks</b>		<b>Poster Presentations</b>	
<b>9</b>	<b>30</b>		<b>60</b>		<b>79</b>	
	I : 9	II : 21	I : 33	II : 27	I : 52	II : 27



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## Annexure 3

### Summary Table of Countries Participating

Algeria  
Austria  
Brazil  
Canada  
China  
Cote d'Ivoire  
Ethiopia  
France  
Germany  
Italy  
Japan  
Korea  
Libya  
Morocco  
Netherlands  
Pakistan  
Poland  
Slovenia  
Spain  
Sweden  
Switzerland  
Tunisia  
United Kingdom  
United States



## Annexure 4

### Registration fees

**Including transport, five (5) nights in full board accommodation\*,  
abstract booklet, coffee breaks, banquet...**

	Before 15 September 2010	After 15 September 2010	On-site
Regular	480 Euros	540 Euros	600 Euros
Participant from developing countries	350 Euros	400 Euros	450 Euros
Foreign Students	350 Euros	400 Euros	450 Euros
Tunisian	250 Euros	280 Euros	280 Euros
Industrial	650 Euros	700 Euros	800 Euros
Accompanying person	300 Euros	350 Euros	350 Euros

\* To insure real interaction between researchers, all participants were lodged in the same hotel. A five Star hotel (El Mouradi Palace, ElKantaoui, Sousse, Tunisia).

## Annexure 5

### Financial Support

#### Financial Support

#### Invited Speakers

(All amounts are in Euros)

Name and Surname	Country	Travel expenses	Registration fees	Lodging expenses
Francis Garnier	France		250	205
Ivo Alexandre Hümmelgen	Brazil	1250		
Gilles Horowitz	France		250	205
Peter Spearman	U.K	752	250	205
Rabah Boukherroub	France		250	205
Nathaniel D. Robinson	Sweden	500	250	205
Daniel Ayuk Mbi Egbe	Austria	290	250	205
Heinz Bässler	Germany		250	205
Joel Davenas	France		250	205
André-Marie Tremblay	Canada		250	205
Claude Bourbonnais	Canada		250	205
Gilles Montambaux	France		250	205
Hélène Bouchiat	France		250	205



**Supported expenses  
Invited Speakers**  
(All amounts are in Euros)

Name and Surname	Country	Travel expenses	Registration fees	Lodging expenses
John Singleton	USA		250	205
Stuart Brown	USA	1000	250	205
Feodor Kusmartsev	U. K	752	250	205
Inès Safi	France		250	205
Mark Goerbig	France		250	205
Michel Héritier	France		250	205
Natasha Kirova	France		250	205
Ouahab Lahcène	France		250	205
Martin Dressel Physikalisch	Germany		250	205
Andrei Varlamov	Italy		250	205
Kazushi Kanoda	Japan		250	205
Murata Keizo	Japan		250	205
Shinya Uji	Japan		250	205
Yung Woo Park	Korea		250	205
Eugenio Coronado	Spain		250	205
Jean-Marc Triscone	Switzerland		250	205
Thierry Giamarchi	Switzerland		250	205

**Supported expenses  
Foreign Participants**  
(All amounts are in Euros)

Name and Surname	Country	Travel expenses	Registration fees	Lodging expenses
ElMostapha Lotfi	Morocco		250	205
Barhdadi Abdellatif	Morocco		250	205
NASREDDINE Haine	Algeria			205
Boutabia Sabah	Algeria			80
Nour Eddine Hakiki	Algeria			205
BELDJILALI Abdeslem	Algeria			205
Boudiba Louiza	Algeria			80
Belhadji Maamar	Algeria			120
Kaboub Lakhemici	Algeria			120
Amirouche Leila	Algeria			120
Saïdi Nadia	Algeria			120
Saïdi Mohamed	Algeria			120
Anis-ur-Rehman Muhammad	Pakistan	776		120
Yohannes Teketel	Ethiopia	573	250	205
Konan Kouakou	Cote d'Ivoire	1393	250	205

Total travel expenses	Total registration fees	Total lodging expenses	Total
7286	8250	8260	23796

## Annexure 6

### Received funds

<b>Subventions</b>	<b>Amounts</b>	<b>Conversion</b>	<b>Amounts (TND)</b>
SITEP	3000 TND		<b>3000</b>
Minister of Higher Education and Scientific Research	3000 TND		<b>3000</b>
Odyssée	1000 TND		<b>1000</b>
University of Sousse	500 TND		<b>500</b>
Vermeg	5000 TND		<b>5000</b>
Faculty of Sciences of Tunis	1000 TND		<b>1000</b>
IUPAP	7000 €	1,91	<b>13370</b>
ICTP	4000 €	1,91	<b>7640</b>
EOARD	5000 \$ US	1,32	<b>6600</b>
	<b>Total</b>		<b>41110</b>
	<b>Total (€)</b>		<b>21524</b>

**TND** : Tunisian Dinard

**SITEP** : La Société Italo-Tunisienne d'Exploitation Pétrolière.

**IUPAP**: International Union of Pure and Applied Physics.

**ICTP** : Abdus Salam International Centre for Theoretical Physics.

**EOARD** : European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory.

**IFC** : Institut Français de Coopération, Tunisia. IFC has provided three (3) flight tickets for three invited French speakers.

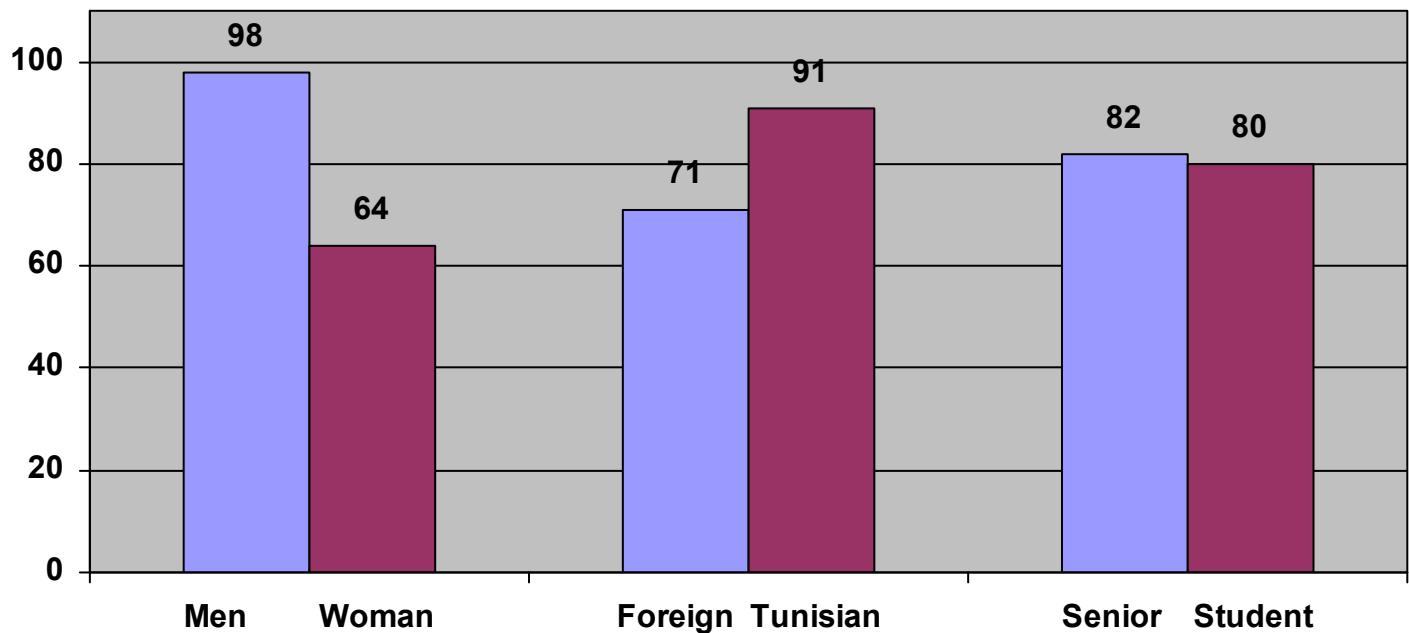


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**Tunis-Air :** According of an agreement with the Tunisian Airlines Company Tunisair, all participants in the ICoCoM2010 conference, who used Tunisair flights, have profited of 50% of discount on all air tickets Tunisair (Economic Class).

## Annexure 7

### PARTICIPATION STATISTICS



ICoCoM2010 attracted about 160 researchers from 24 countries

## Annexure 8

### PROCEEDINGS PUBLICATION

The proceedings of the ICoCoM2010 will be published in two special issues

1/ a special issue of Synthetic Metals for basically the topics related to conducting polymers.

The issue will contain 20-25 of the selected papers

([http://www.elsevier.com/wps/find/journaldescription.cws\\_home/504105/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/504105/description#description)).

2/ a special issue of Journal of Physics: Condensed Matter, related the topics dealing with superconducting materials and strongly correlated electron systems. This issue will not include only papers from the conference attendees but also contributions from invited authors selected by the scientific committee and the journal Editorial Board. There will be roughly 40 accepted papers (<http://iopscience.iop.org/0953-8984/>).